

## Better Buildings Residential Network Peer Exchange Call Series:

Health and Energy Efficiency Are Trending – Learn What's Happening

October 24, 2019



#### **Agenda and Ground Rules**

- Agenda Review and Ground Rules
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
  - Sara Hayes & Christine Gerbode, ACEEE
  - Bruce Tonn, Three<sup>3</sup>
  - Laura Capps, Vermont Energy Investment Corporation
- Open Discussion
- Closing Poll and Announcements

#### **Ground Rules:**

- 1. Sales of services and commercial messages are not appropriate during Peer Exchange Calls.
- 2. Calls are a safe place for discussion; **please do not** attribute information to individuals on the call.

The views expressed by speakers are their own, and do not reflect those of the Dept. of Energy.





### Better Buildings Residential Network

#### Join the Network

#### **Member Benefits:**

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- One-on-One brainstorming conversations

#### **Commitment:**

Members only need to provide one number: their organization's number of residential energy upgrades per year, or equivalent.

#### <u>Upcoming Calls (2<sup>nd</sup> & 4<sup>th</sup> Thursdays):</u>

- Nov 14: Window Treatments The Undervalued Highly Efficient Energy Efficiency Measure
- Dec 12: Electrification What Does It Mean for Energy Efficiency?

Peer Exchange Call summaries are posted on the Better Buildings website a few weeks after the call For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join









Sara Hayes & Christine Gerbode

American Council for an Energy
Efficient Economy



# Keeping up with rapidly evolving developments at the intersect of health and energy

Sara Hayes, Program Manager, Health and Environment American Council for an Energy-Efficient Economy

**BBRN Peer Exchange Call** 

October 24, 2019





The American Council for an Energy-Efficient Economy is a nonprofit 501(c)(3) founded in 1980. We act as a catalyst to advance energy efficiency policies, programs, technologies, investments, & behaviors.

Our research explores economic impacts, financing options, behavior changes, program design, and utility planning, as well as US national, state, & local policy.

Our work is made possible by foundation funding, contracts, government grants, and conference revenue.













## How I plan to keep up with the times....

Latest research supporting program design and growth

Unlocking new and expanded funding sources

Emerging opportunities - \*hot topics\*

Prospects for professional development and networking



## How I plan to keep up with the times....



## Multiple Benefits of Energy Efficiency



Protect health

Improve safety and comfort

Save money

Create jobs and opportunity

Protect the environment



## EE Health Benefits for Building Occupants

#### Common health stressors in homes include... Weatherization measures This reduces or prevents help to... And leads to... Formaldehyde health issues like... Carbon Monoxide Chemical Other VOCs Filter and Circulate Air Asthma attacks Reduced financial COPD burden and stress Particulates. from energy and **Bronchitis** Radon medical bills Nasal allergies Colds, rhinitis Fewer ER trips, Humidity Headaches physician visits, Condensation **Regulate Indoor Moisture** Heart disease and premature Extreme Heat and Temperature Hypertension deaths Extreme Cold Sinusitis Fewer days of Fatigue Dust & Allergens school or work Anxiety & stress Mold lost Other mental Strengthen Barriers to illness Pests Improved comfort **Outdoor Triggers Bacterial agents** and safety Lung cancer



#### Health in the Built Environment

- Over 50% of the US building stock is more than 35 years old
- Low-income populations and people of color live in homes with inadequate housing conditions at disproportionately high rates
- Many of the chronic diseases exacerbated by inadequate housing conditions disproportionately fall on low-income populations and people of color
- Children experience asthma at higher rates than adults
- 40% of asthma risk in children is associated with home exposures (e.g., moisture, temperature variations, pests)



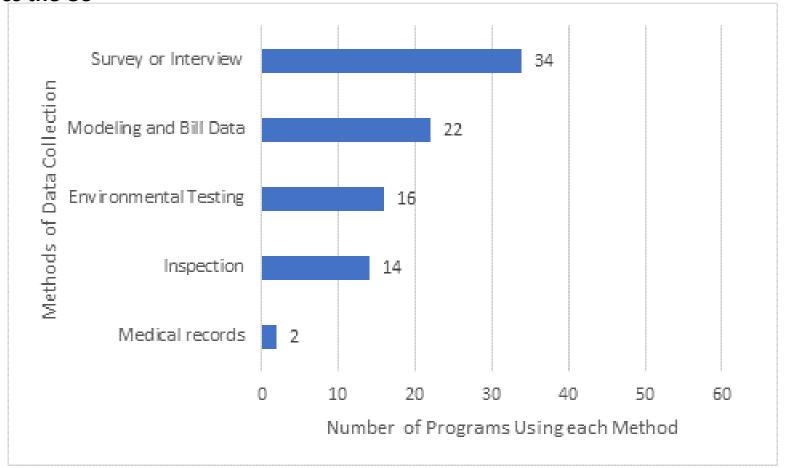
#### Measure and Monetize Health Benefits

- Account for participant health impacts in costeffectiveness tests
- Reduce deferral rates
- Increase participation through marketing
- Target programs to households most in need
- Attract interest and build cross-sector partnerships with health care partners
- Unlock additional funding



## Findings from ACEEE Analysis

Methods of data collection from a review of 63 weatherization plus health programs across the US





Source: ACEEE, "Protecting the Health of Vulnerable Populations with In-Home Energy Efficiency: A Survey of Methods for Demonstrating Health Outcomes"

### Monetizing Health Outcomes

- Measurement methods and data collection form the basis of monetizing the health outcomes
- A variety of health outcomes can be monetized
  - e.g. reduced thermal stress, asthma symptoms, lost work days, trip and fall injuries, home fires, CO poisonings, etc.
- Several studies have calculated the value of health outcomes for participants of weatherization programs



## Other Emerging Opportunities

- Building cross-sector partnerships
- Energy policy to address health inequity
- Mitigating the health effects of climate change
- In-home energy efficiency programs as a preventive health care strategy
- Energy efficiency to achieve specific community needs: keep rural hospitals open, help older adults age in place, address high rates of asthma





#### 2020 Conference on Health, Environment, and Energy

Hyatt Centric French Quarter
New Orleans, LA
January 21, 2020 to January 23, 2020

Early bird rate ends Oct. 31

Register: <a href="https://aceee.org/conferences/2020/chee">https://aceee.org/conferences/2020/chee</a>



















































Georges C. Benjamin Executive Director American Public Health Association



KEYNOTE ADDRESS - Climate Change: A Public Health Approach

NEW Center for Climate, Health and Equity
 More info: <a href="https://apha.org/topics-and-issues/climate-change/center">https://apha.org/topics-and-issues/climate-change/center</a>



## Develop Professional Credentials in this Emerging Field

- Pre-conference Workshop The Building Performance Institute Healthy House Principles (HHP) Certification
  - Register here: <a href="https://aceee.org/conferences/2020/chee">https://aceee.org/conferences/2020/chee</a>

 Continuing education credits for doctors, nurses, community health workers

Architects? Let us know!

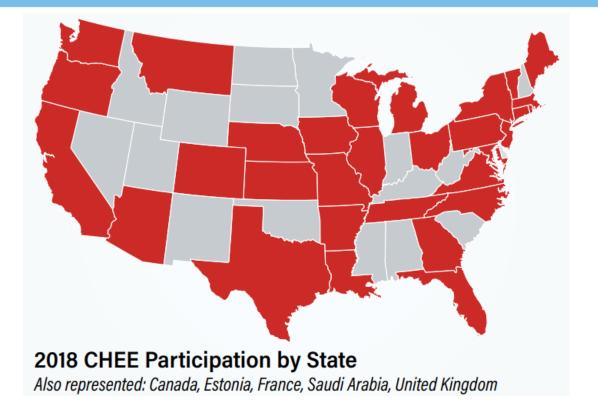


### Develop a Professional Network

- Attend the Conference
  - Last year we SOLD OUT
  - Small group networking dinners, receptions, off-site activities
  - Sponsor or help organize a networking activity. Contact Sara at <a href="mailto:shayes@aceee.org">shayes@aceee.org</a>
- Join the Bridging Health and Energy Efficiency working group
  - Over 100 professionals from more than 80 organizations
  - To join email Christine Gerbode at <u>cgerbode@aceee.org</u>



## Conference Networking



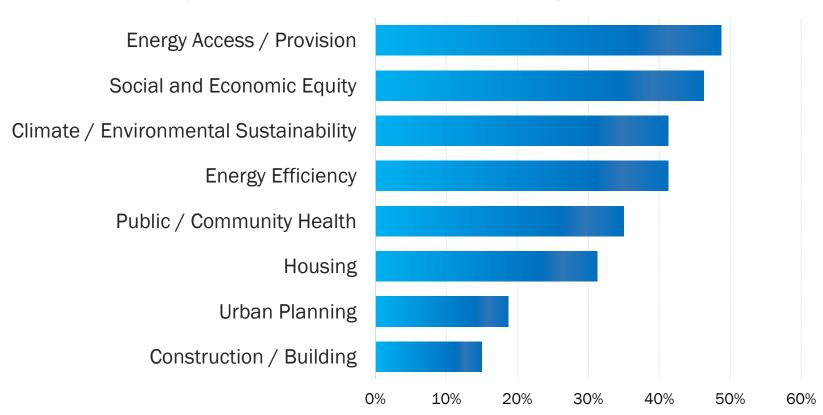
Attendees included: Public health professionals; medical doctors; energy researchers; academic researchers; environmental regulators and advocates; local, state, and federal policymakers; low-income community advocates; utility staff; architects; general contractors; NGOs; consultants; and energy efficiency professionals.

 Organizations that came last time: <u>https://aceee.org/sites/default/files/pdf/conferences/chee/2020/chee18-orglist.pdf</u>



#### What Topics Do BHEE Members Work On?

#### **Major Focal Areas of Participant Organizations**







## Thank you

Sara Hayes
ACEEE





Bruce Tonn *Three*<sup>3</sup>



HEALTH-RELATED NON-ENERGY IMPACTS OF WEATHERIZING LOW INCOME HOMES AND AFFORDABLE MULTIFAMILY HOUSING ACROSS HOME TYPES AND CLIMATE ZONES

Bruce Tonn Three<sup>3</sup>, Inc.

Three<sup>3</sup>



#### **ACKNOWLEDGEMENTS**

#### **Sponsors**

•The JPB Foundation & Utility Program Administrators in Massachusetts; Robert Wood Johnson Foundation

#### **Key Team Members**

- •Three<sup>3</sup> Beth Hawkins, Bruce Tonn, Erin Rose, Michaela Marincic
- •Slipstream Claire Cowan, Scott Pigg, David Vigliotta & many others
- •NMR Group Greg Clendenning, Nicole Rosenberg, Christine Smaglia & many others
- •University of Tennessee, Center for Applied Research and Evaluation Linda Daugherty, Amy Melton

#### **Contributors**

- Weatherization Agencies (e.g., CEDA, La Casa, Project Home, Racine Kenosha CAA, AEA, NMIC, SPRC, ABCD, Action Inc., RISE, CEO, 3EThermal)
- Building Owners (e.g., LUCHA, Mercy Housing, Related Midwest)
- Utilities (e.g., National Grid, Eversource)
- •State Weatherization Offices (e.g., WI, VT, NH)
- •Energy Efficiency For All State Leads
- Participants of Planning Workshops in NYC, Chicago and Knoxville

#### **OUTLINE**

- Project Overviews
- Comparison of Baseline Conditions
- Comparison of Survey Findings
  - Home Conditions
  - Health Impacts
  - Budget Impacts



#### **Project Overviews**

| Project  | Sponsor  | Location  | Home<br>Types |     | amples<br>wT/ T/ ( |     | Status                |
|--|--|-----------|---------------|-----|--------------------|-----|-----------------------|
| Weatherization Assistance Program (WAP)        | DOE  | National  | SF, MH        | 803 | 665                |     | Complete              |
| Knoxville Extreme<br>Energy Makeover<br>(KEEM) | Robert Wood<br>Johnson<br>Foundation                     | Knoxville | SF            | 197 | 99                 | 152 | Preliminary<br>Final* |
| Low-Income<br>Multifamily (LIMF)               | The JPB Foundation, Massachusetts Program Administrators | NE, MW    | MF            | 521 | 319                | 820 | Phase I<br>Complete** |

- In Spring 2020, KEEM data will be merged with Home Uplift data to increase sample sizes.
- \*\* Final Phase I sample size exceeds 1900 households

## **Baseline Demographics Differ**

| Demographic Characteristic         | WAP<br>(N=665) | KEEM<br>(N=252) | LIMF<br>(N=1139) |
|------------------------------------|----------------|-----------------|------------------|
| Respondent Gender: Female (%)      | 74%            | 76%             | 62%              |
| Respondent Age                     | 57             | 56              | 59               |
| Average Household Size             | 2.38           | 2.07            | 1.47             |
| Black or African American (%)      | 18%            | 35%             | 38%              |
| Respondent Employed (%)            | 34%            | 34%             | 21%              |
| Respondent Retired (%)             | 31%            | 27%             | 46%              |
| Respondent Married (%)             | 32%            | 23%             | 9%               |
| Respondent Education: GED or below | 60%            | 51%             | 58%              |

#### **Baseline Home Conditions Differ**

| Physical Condition of Home  | WAP | KEEM | LIMF |
|---|-----|------|------|
| How often home too drafty? (all to some of the time)                                      | 71% | 83%  | 48%  |
| Outdoor noise? (a great deal to some)   | 69% | 73%  | 62%  |
| How infested is home with cockroaches, other insects, and spiders?(extremely to somewhat) | 25% | 34%  | 21%  |
| How infested is home with mice? (extremely to somewhat)                                   | 10% | 28%  | 19%  |
| Frequent mildew odor or musty smell? (%yes)   | 30% | 40%  |      |
| How often have observed standing water in home? (always to sometimes)                     | 20% |      | 9%   |
| Have seen mold in home? (%yes)  | 28% | 39%  | 20%  |

## Baseline Health Conditions Differ

| Health-Related Variables                               | WAP  | KEEM | LIMF |
|--|------|------|------|
| Asthma Rates   | 14%  | 15%  | 22%  |
| Asthma – ED Visit (Yes)*                               | 13%  | 23%  | 38%  |
| Severe Headaches (Yes)                                 | 20%  | 33%  | 23%  |
| Flus   | 22%  | 22%  |      |
| Sinus Infections                                       | 37%  | 54%  |      |
| Number of days previous month physical health not good | 10.3 | 10.9 |      |
| Number of days previous month mental health not good   | 7.1  | 8.9  | 5.9  |
| Number of days previous month bad days of rest/sleep   | 11.2 | 14.2 | 7.2  |

## **Baseline Budget Conditions Differ**

| Survey Item/Group   | WAP | KEEM  | LIMF |
|---|-----|-------|------|
| It is hard or very hard to pay energy bills                           | 75% | 70.1% | 38%  |
| Received a disconnect notice past year                                | 39% | 56.4% | 26%  |
| Did not buy food to pay energy bills                                  | 33% | 41.4% | 23%  |
| Did not pay energy bills to buy food                                  | 27% | 20.8% | 22%  |
| Received food assistance (e.g., WIC)                                  | 56% | 47.8% | 62%  |
| Did not pay energy bill to fill prescriptions                         | 12% | 13.9% | 9%   |
| Did not fill prescriptions to pay energy bills                        | 28% | 33.1% | 11%  |
| Could not afford prescriptions  | 33% | 43%   | 16%  |
| Used one or more short-term, high-interest loans to pay utility bills | 19% | 24.3% | 10%  |

#### **Changes in Home Conditions**

| Physical Condition of Home                                  | WAP  | KEEM | LIMF  |
|---|------|------|-------|
| Home too drafty reduced                                     | -39% | -18% | -5%   |
| Outdoor noise reduced                                       | -15% | -12% | -8%   |
| Home less infested with cockroaches, other insects, spiders | -16% | -9%  | -0.4% |
| Home is less infested with mice                             | -6%  | -13% | -4.2% |
| Mildew odor or musty smell reduced                          | -9%  | -12% |       |
| Mold in home reduced  | -9%  | -17% | -5.6% |
| Home less often kept at unhealthy temperatures reduced      | -13% | -41% | -11%  |

**Changes in Health** 

| Health Impacts   | WAP    | KEEM  | LIMF  |
|--|--------|-------|-------|
| Asthma Symptoms (< 3 months since last) reduced                        | -11.8% | TBD   | +4%   |
| Asthma Emergency Department Visits reduced                             | -11.5% | TBD   | -22%  |
| Asthma Hospitalizations reduced  | -3.1%  | TBD   | -12%  |
| Medical attention too hot reduced                                      | -0.9%  | 0.0%  | -0.4% |
| Medical attention too cold reduced                                     | -1.7%  | -2.5% | -2.3% |
| Number of days previous month physical health not good reduced         | -48%   | -10%  | -18%  |
| Number of days previous month mental health not good reduced           | -48%   | -35%  | -22%  |
| Number of days previous month did not get enough rest or sleep reduced | -44%   | -15%  | -13%  |

#### Other Observations About Health

- Seeing some positive impacts in these areas
  - Headaches
  - Arthritis
  - Diabetes
  - Oral health
- Many households' health is a risk due to power outages
  - Electrical medical equipment
  - Refrigerated medicines
  - Spoiled food from refrigerator outages

#### **Changes in Budget Conditions**

| Survey Item/Group   | WAP  | KEEM | LIMF |
|---|------|------|------|
| Hard to pay energy bills reduced  | -26% | -22% | -11% |
| Disconnect notices reduced  | -10% | -8%  | -4%  |
| Did not buy food to pay energy bills reduced                                  | -6%  | -8%  | -5%  |
| Did not pay energy bills to buy food reduced                                  | -8%  | -3%  | -4%  |
| Received food assistance (e.g., WIC) reduced                                  | -6%  | +2%  | -6%  |
| Could not afford prescriptions reduced  | -11% | -11% | -6%  |
| Used one or more short-term, high-interest loans to pay utility bills reduced | -7%  | +2%  | -4%  |

#### **Observations**

- Homes entering weatherization programs differ
  - By home type
  - By climate zone
- Weatherization's impacts on home conditions, health, and household budgets also differ

#### **Contact Information**

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Laura Capps
Vermont Energy Investment Corporation





# Energy-Plus-Health Playbook & Healthy Homes Vermont



## 15 Minutes

- Playbook Overview
  - Industry Trends Creating
     Opportunities
  - Cross-Sector Collaboration
  - Program Designs Tiers1, 2, 3
  - Playbook Resources
- Efficiency Vermont Healthy Homes Programming





## Playbook Overview

| Section 1 | Introduction and Playbook Organization                              |
|-----------|---|
| Section 2 | Making the Case for Energy-Plus-Health Programs                     |
| Section 3 | Choosing the Energy-Plus-Health Program Model that is Right for You |
| Section 4 | Designing a Successful Energy-Plus-Health Program                   |
| Section 5 | Navigating Health Care Industry Partners as You Build Collaboration |
| Section 6 | Energy-Plus-Health Program Case Studies                             |
| Section 7 | Energy-Plus-Health Program Resources and Sample Materials           |

# Energy-Plus-Health Playbook



July 2019





## **Energy Sector Trends**

- Changing value of energy efficiency: Diminished savings opportunities from lighting, grid challenges, and need for higher customer engagement and engagement with customers not currently reached.
- Growing desire to reach low-income customers: Address weatherization deferrals due to health and safety issues and cost-effectiveness.
- Workforce training now integrates health: Healthy homes assessments and formal credentialing, safe work practices around hazardous materials, and.





## **Health Sector Trends**

- **Healthy homes**: Integration of energy efficiency into healthy homes framework.
- **Health care industry**: Disruption in health care payment structures to reward outcomes rather than reimburse visits to medical services.
- **Public health policy:** Many public health departments adopting Health in All Policies and integrating Social Determinants of Health indicators.





## **Building Cross-Sector Collaboration**

Building buy-in:

Understanding mutual goals and each partner's value proposition.

- Partner identification: Recommendations for finding appropriate health sector partners.
- Key roles: Critical step of identifying coordinating entity.
- Addressing cross-sector challenges: Language and protocols.
- Leveraging for success:

Working together to braid resources that support positive health outcomes.





## Energy-Plus-Health Program Models

#### Three-tier framework

- Each tier engages health and safety and increasingly integrates health focus.
- Helps PA's decide which program model is feasible and aligns with local circumstances
- Identifies stakeholders and roles
- Offers options for increasing impact and outcomes

Case studies & sample materials included for each tier





## Tier 1: Health and Safety



#### Promote health and safety

- Do no harm
- Combustion and ventilation safety

#### Key stakeholders

- Program administrators
- Home energy contractors with approved training and certification
- Community-based organizations

#### Cost-effective upgrades



### Tier 2: Cross-Sector Referrals



- Formal partnerships and referral network
  - leverage partner resources to deliver healthy homes services or coordinated referrals with systems for tracking follow-up
- Key stakeholders
  - Program administrators
  - Home visiting programs related to energy, health and/or housing
  - Other community-based organizations or public health offices
  - Home energy contractors with approved training and certification
- Customer engagement, and community or low-income impact



## Tier 3: Health Integration



- Integrated Energy-Plus-Health Services
  - Include health sector partners at the table from the start
  - Focus on collecting, tracking and documenting health outcome data
- Key stakeholders
  - Program administrators
  - Health care providers
  - Healthy homes assessors
  - Trained contractors
- Braids multi-sector funding sources to address health needs
  - Addresses policy goals to quantify non-energy health benefits



## Case Studies & Materials

#### BERKSHIRE HEALTHY HOMES

#### PATIENT CONSENT

#### About the Program

Berkshire Healthy Homes is offered by the Center for EcoTechnology (CET) in partnership with Berkshire Health Systems to provide energy upgrades and home improvements to eligible participants to improve energy efficiency and address triggers associated with asthma and Chronic Obstructive Pulmonary Disease (COPD). These energy and healthy home improvements may be provided at no or low cost to homeowners and property owners with rental apartments where eligible asthmatic and COPD patients live. Berkshire Health Systems will refer clients to the program for an initial survey, which will be followed by a home energy assessment and healthy home evaluation to determine if the household and property owner are eligible for Berkshire Healthy Homes home improvements.

Berkshire Healthy Homes will track the energy use and indoor air quality before and after the energy and healthy home improvements are completed. CET will contact clients 3 and 12 months (via phone interview) after the work is completed to assess changes in energy usage, asthma symptoms and healthcare use.

#### Benefits

Potential benefits of participating in this program include lower energy bills and use, more comfortable home temperatures and improved indoor air quality.

Funds for this program are limited. We anticipate approximately 20 percent of participants who receive a Healthy Homes evaluation will be able to receive home repairs and services that address indoor environmental quality.

#### Participation

Participants in Berkshire Healthy Homes program agree to the following:

- Receive information from Berkshire Health Systems about Berkshire Healthy Homes and potential benefits
- Allow Berkshire Health Systems to release personal demographics (age, gender, contact information) and hospital
  utilization (admissions and emergency department use) information pertaining to asthma and/or COPD only.
   Other aspects of your health and health care will not be released to Berkshire Healthy Homes. Information on unrelated diagnoses, medications, testing will not be released.
- Work with Berkshire Healthy Homes representative to schedule a no-cost home energy assessment conducted by Mass Save or the Weatherization Assistance Program and provide a copy of report(s) with energy conservation and efficiency recommendations.
- · Work with Berkshire Healthy Homes representative to schedule a no-cost healthy homes evaluation.
- Allow installation of eligible energy efficiency improvements provided at no or low cost such as energy efficient lighting, insulation, air sealing, programmable thermostats, and heating system upgrades.
- Allow installation of eligible healthy home improvements provided at no or low cost such as heat recovery ventilation and carpet removal, and installation of carbon monoxide (CO) detectors.
- Allow indoor air quality measurement and monitoring of conditions such as carbon dioxide and relative humidity





# Efficiency Vermont's Healthy Homes Story



# Efficiency Vermont Opportunity Assessment

Sustainable **Funding for** Healthy Home Validating the Interventions, Case for Healthy including Homes through Energy Energy **Efficiency** Efficiency **Exploring the** Case for Healthy Homes through **Energy Efficiency** 



## Healthy Homes Vision and Goals

Through efficiency, Vermont homes are safe, affordable, comfortable, durable and resilient resulting in an improvement in population health and a reduction in greenhouse gases.

Goal 1: Provide cost-effective services that improve health outcomes while reducing energy burden.

Goal 2: Increase impact through strong, mutually beneficial healthyhome partnerships.

Goal 3: Be a **credible and valued partner** in the health/energy nexus.

Goal 4: Create a **clear strategy** for healthy, affordable homes.





# VT Healthy Homes Pilot Work

- NVRH / NETO/ EVT
  - 10 homes asthma/COPD
- Springfield / SEVCA / VDH / EVT
  - 10 home asthma
- UVM MC CHT / VDH / CVOEO / EVT
  - 20 homes falls prevention
- UVM MC PP / EVT
  - 36 homes cystic fibrosis& asthma (in design)



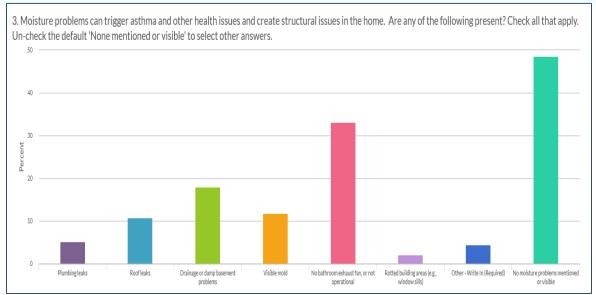


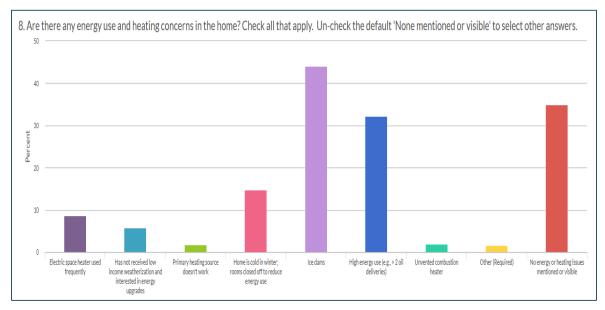
University of Vermont
MEDICAL CENTER





# One Touch – Moisture & Energy





## OneCare Data



# Prevalence of COPD and Asthma in the OneCare Vermont Attributed population

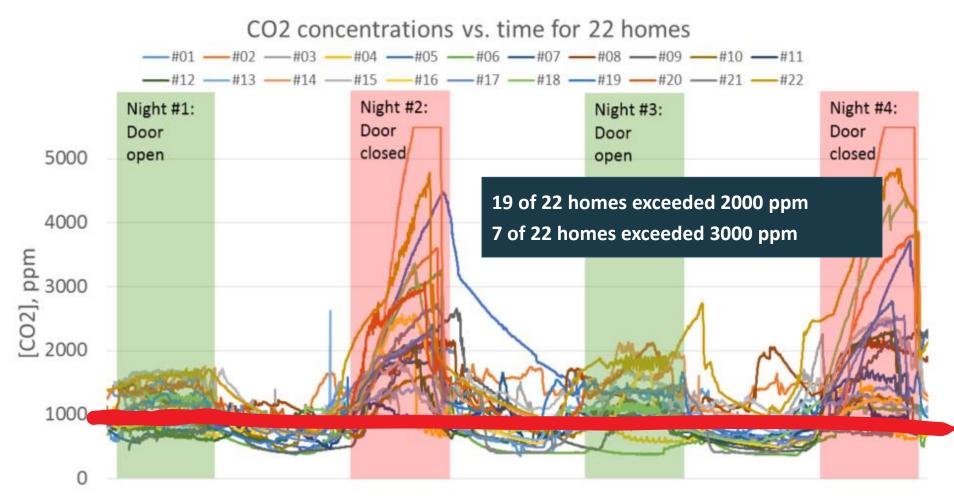
|          | COPD    |          |       | Asthma  |          |       | Total Attributed Deputation |          |        |
|----------|---------|----------|-------|---------|----------|-------|-----------------------------|----------|--------|
| Payer    | Adults  | Children | Total | Adults  | Children | Total | Total Attributed Population |          |        |
|          | Age 19+ | Age 0-18 |       | Age 19+ | Age 0-18 |       | Adults                      | Children | Total  |
| Medicaid | 630     | 14       | 644   | 1,533   | 1,433    | 2,966 | 14,022                      | 14,571   | 28,593 |
|          | 5%      | 0.10%    | 2%    | 11%     | 10%      | 10%   |                             |          |        |
| Medicare | 4,538   | _        | 4,538 | 2,966   | _        | 2,966 | 37,996                      | -        | 37,996 |
|          | 12%     |          | 12%   | 8%      |          | 8%    |                             |          |        |
| BCBS     | 261     | _        | 261   | 1,055   | 208      | 1,263 | 26,110                      | 4,072    | 30,182 |
|          | 1%      |          | 1%    | 4%      | 5%       | 4%    | 20,110                      | 1,072    | 30,102 |
| Total    | 5,429   | 14       | 5,443 | 5,554   | 1,641    | 7,195 | 78,128                      | 18,643   | 96,771 |
|          | 7%      | 0%       | 6%    | 7%      | 9%       | 7%    | , 0,120                     | 10,043   | 30,771 |

COPD & Asthma are defined using The Johns Hopkins ACG software. Johns Hopkins uses Expanded Diagnosis Clusters (EDC) to assign a diagnosis found in claims or encounter data to one of the 282 EDCs that are clinically similar. EDCs are used to describe the prevalence of specific diseases within a single population, compare disease distributions and aid in disease management.



## EVT Study - Whole-house ventilation

(more than just bath fans!)



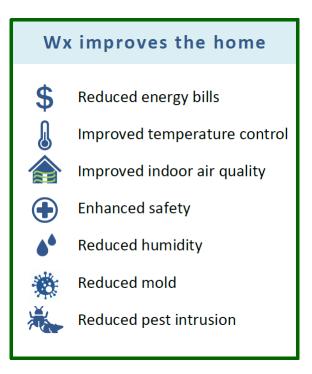


# Wx Health Impacts VT

The estimated 10-year economic benefit per household is nearly three times greater than the initial expense.

| Benefit category                           | Primary beneficiary | First-year benefit | 10-year benefit |
|--|---------------------|--------------------|-----------------|
| Thermal and electric energy cost savings   | Household           | \$1,174            | \$11,740        |
| Reduced impacts of asthma, cold, and heat* | Household           | \$276              | \$2,762         |
| Reduced fine particulate emissions         | Public              | \$1,026            | \$10,255        |
| Total                                      | Household + public  | \$2,476            | \$24,757        |

<sup>\*</sup>More benefits are expected but could not be quantified, such as better mental and social health, fewer accidental injuries, and increased productivity.



VT Dept. of Health, Weatherization + Health: Health and Climate Change Co-Benefits of Home Weatherization in Vermont. 2018



# Health in All Programs

- Vermont Healthy Hom Strategy
  - Data & scale
- Vermont Healthy Hom Playbook
- Efficiency Vermont Healthy Buildings Strategy





# Local, Regional, National



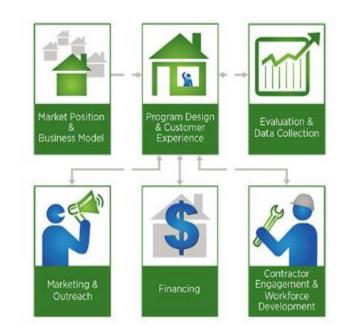
Graphic credit: https://www.uctoday.com/collaboration/team-collaboration/team-collaboration-101/



### Explore the Residential Program Solution Center

Resources to help improve your program and reach energy efficiency targets:

- Handbooks explain why and how to implement specific stages of a program.
- Quick Answers provide answers and resources for common questions.
- Proven Practices posts include lessons learned, examples, and helpful tips from successful programs.
- Technology Solutions NEW! present resources on advanced technologies, HVAC & Heat Pump Water Heaters, including installation guidance, marketing strategies, & potential savings.



https://rpsc.energy.gov





### Thank You!

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Please send any follow-up questions or future call topic ideas to:

bbresidentialnetwork@ee.doe.gov



